01-D-124, Highly Enriched Uranium Materials Facility

Y-12 Plant, Oak Ridge, Tennessee

1. Construction Schedule History

	Fiscal Quarter				Total Estimated Cost ($000)	Total Project Cost ($000)
	A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
FY 2001 Budget Request *(Preliminary Estimate)*	1Q 2001	1Q 2002	2Q 2001	2Q 2005	120,000	144,000

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
2001	17,800	17,800	11,800
2002	33,500	33,500	25,800
2003	41,200	41,200	40,600
2004	27,500	27,500	36,500
2005	0	0	5,300

3. Project Description, Justification and Scope

The Highly Enriched Uranium Materials Facility will support the consolidation of long-term highly enriched uranium materials into a state-of-the-art facility. The new facility will result in cost savings and an increased security posture and will feature: storage in an earthen-bermed structure for enhanced security, an automated inventory system which minimizes inventory validation, new Safe Secure Trailer (SST) or Safeguard Transport (SGT) shipping/receiving station, a central location near HEU processing facilities, an underground connector to allow direct tie-in to a future EUO Modernization facility which allows a reduced footprint for HEU activities, and a small administrative facility to house the building operators. This facility will be located in a Protected Area. The Systems Requirements Document for the Y-12 Plant HEU Materials Facility, Y/EN-5636 (May 1999), documents the forecasted long-term storage requirement of approximately 14,000 cans and approximately 14,000 55-gallon drums. It will also

provide a contingency storage area for an additional 4,000 drums which will be designed such that it can be segregated from the main storage area for non-proliferation initiatives.

The Y-12 Plant Environmental, Safety, and Health (ES&H) Vulnerability Assessment, dated October 1996, resulted in a number of findings related to the current storage of HEU in multiple buildings. The assessment raised issues concerning fire, flooding, natural phenomena, and related concerns which would likely involve major upgrades to existing facilities in order to continue present HEU storage. In addition to ES&H vulnerabilities, existing conditions are inefficient. Maintaining and expanding HEU storage in multiple facilities involves increased security personnel, increased operations personnel, increased maintenance and utility costs, increased Special Nuclear Material (SNM) vehicle transfers, increased cost for ES&H, facility safety assessments and upgrades, and management oversight. Costs for HEU storage will be reduced by implementing this initiative. Cost savings are achieved by reduced personnel requirements, by the efficient use of space and technology, by reduction of the footprint, and by eliminating the necessity for creating additional storage in the old facilities.

This project will provide the following:

- receipt and storage for Canned Sub-Assemblies (CSAs)
- docks for SST/SGT shipping/receiving
- a small administrative facility
- storage space for materials subject to International Atomic Energy Agency (IAEA) safeguards inspections

The life expectancy of the facilities is 50 years, thereby assuring a viable, long-term HEU storage capability to support the enduring weapons stockpile and strategic reserve for the foreseeable future.

The facilities will be designed to meet Conduct of Operations requirements, minimize the number of personnel required for operations, and meet DOE requirements for SNM accountability and control.

FY 2001 funding will be utilized for Titles I and II activities, initial site preparation, and construction management.

Project Milestones:

FY 2001:	A-E Work Initiated	1Q
	Physical Construction Started	2Q
FY 2002:	A-E Work Completed	1Q
FY 2005:	Physical Construction Completed	2Q

4. Details of Cost Estimate [a]

[a] Conceptual design defining these costs was completed in FY 1999 at an estimated cost of $720,000. The annual escalation rates assumed for FY 2000 through FY 2005 are 2.6, 2.6, 2.5, 2.6, 2.9, and 2.9 percent, respectively.

(dollars in thousands)

	Current Estimate	Previous Estimate
Design Phase		
Preliminary and Final Design costs (Design Drawings and Specifications)	7,750	NA
Design Management Costs (0.8% of TEC)	900	NA
Project Management Costs (1.0% of TEC)	1,250	NA
Total, Design Costs (8.3% of TEC)	9,900	NA
Construction Phase		
Other Structures	73,050	NA
Construction Management (8.6% of TEC)	10,350	NA
Project Management (5.1% of TEC)	6,100	NA
Total, Construction Costs (74.6% of TEC)	89,500	NA
Contingencies		
Design Phase (1.7% of TEC)	2,000	NA
Construction Phase (15.5% of TEC)	18,600	NA
Total, Contingencies (17.2% of TEC)	20,600	NA
Total, Line Item Costs (TEC)	120,000	NA

5. Method of Performance

Overall project direction and responsibility resides with the DOE.

A design and build subcontractor under contract to the Facility Manager will design and manage the construction of the HEU Materials Facility except as noted below. The Facility Manager will be responsible for procuring and then managing the design and build subcontractor.

The Facility Manager will be responsible for project integration and will design the data acquisition system, which will tie in to the existing Central Alarm system. The Facility Manager will design and procure speciality systems and equipment, and will design a portion of the site clearance and readiness package.

6. Schedule of Project Funding

(dollars in thousands)

	Prior Years	FY 1999	FY 2000	FY 2001	Outyears	Total
Project Cost						
Facility Cost						

	Prior Years	FY 1999	FY 2000	FY 2001	Outyears	Total
Design	0	0	0	8,650	3,250	11,900
Construction	0	0	0	3,150	104,950	108,100
Total, Line item TEC	0	0	0	11,800	108,200	120,000
Total, Facility Costs (Federal and Non-Federal)	0	0	0	11,800	108,200	120,000
Other Project Costs						
Conceptual design cost [a]	0	720	0	0	0	720
Other project-related costs [b]	0	380	3,350	1,830	17,720	23,280
Total, Other Project Costs	0	1,100	3,350	1,830	17,720	24,000
Total, Project Costs (TPC)	0	1,100	3,350	13,630	125,920	144,000

7. Related Annual Funding Requirements [c]

(dollars in thousands)

	Current Estimate	Previous Estimate
Annual facility operating costs[d]	60	NA
Annual facility maintenance/repair costs[e]	2,000	NA
Programmatic operating expenses directly related to the facility[f]	7,600	NA

[a] A Conceptual Design Report (CDR) was completed in FY 1999 at an estimated cost of $720,000.

[b] NEPA for this project was included in a Site Wide Environment Impact Study resulting in no cost to this project. FY 1999 costs result from initiation of process descriptions for $50,000; criticality safety support for $85,000; expense budget planning and scheduling for $150,000; and other miscellaneous project support for approximately $95,000. FY 2000 activities include: completing the design criteria at an estimated cost of $400,000; beginning Preliminary Safety Analysis Report (PSAR) at $720,000; designing, building, and testing prototypes of storage racks for $300,000; beginning Criticality Double Contingency Analysis (CDCA) for approximately $1,000,000; and completing the process description, D-B selection, subsurface investigation, Performance Execution Plan, and other project documentation for an estimated cost of $930,000. FY 2001 activities include: completion of the PSAR for an estimated cost of $730,000; continuation of work on the CDCA for approximately $710,000; and $390,000 for other project support. FY 2002 activities include: preparing documentation for use of Safe Secure Trailer (SST) for transporting HEU for a cost of $320,000 and continuing the criticality analysis along with other project documentation at a cost of approximately $250,000. An Operational Readiness Review (ORR) technical basis for operations, relocation of cans, development of operational procedures, training, revisions to plans for fire protection, revisions to nuclear control and accountability (NMC&A) procedures, user acceptance testing, and transfer of material will be performed in the outyears at an estimated cost of $17,150,000.

[c] These costs are from the cost/benefit analysis for the HEU building, with additions for the START facility.

[d] Operating costs are the costs of managing the facility.

[e] Facility utility costs are combined with the facility maintenance and repair costs.

[f] These are the costs for receipt, storage, and inventory of the contents.

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Other costs[g]	350	NA
Total related annual funding (operating from FY 2005 through FY 2054)	10,010	NA

[a] Other costs include the ES&H costs for keeping the facility compliant.